

REMARKS

In response to the Official Action mailed November 14, 2002, Applicant amends his application and requests reconsideration. In this Amendment, claims 1 and 3 are cancelled leaving claims 4-19 pending.

In preparing this Amendment, all claims were carefully reviewed and amended, where necessary. These amendments overcome the objections to the claims and the corresponding rejections pursuant to 35 U.S.C. 112, second paragraph. In addition, a few paragraphs of the specification are amended to correct minor apparent errors.

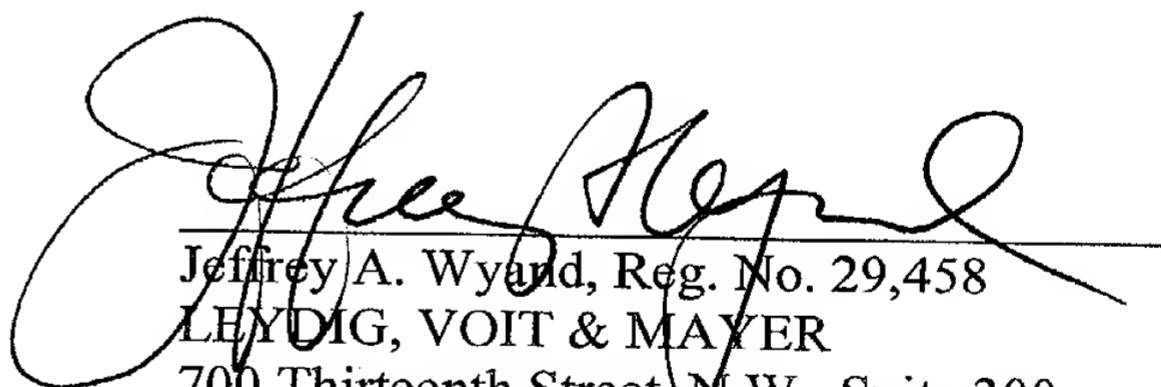
In this Amendment, claims 4 and 14 are rewritten independent form. Thus, there are three pending independent claims, claims 4, 7, and 14. Claim 4 and its dependent claims 5, 6, and 19 were conceded to be allowable. Thus, those claims should be immediately allowed. Likewise, claims 14-18 were stated to be allowable and those claims should be allowed in view of the rewriting of claim 14 in independent form.

Claim 1 and its dependent claim 17 were rejected as anticipated by a U.S. patent and claim 3, a dependent claim depending from claim 1, was rejected as unpatentable over that reference. In view of the cancellation of claims 1 and 3 and the amendment of claim 7 so that it depends from claim 14, the prior art rejection is moot.

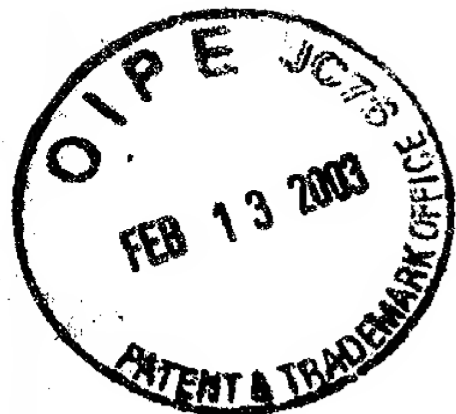
Claim 7 was not rejected over prior art but only with respect to form. In view of the clarifying amendments of claim 7 and its dependent claims 8, 9, and 11-13, claims 7-13 and 18 are now in proper form for allowance.

Reconsideration and favorable Action are earnestly solicited.

Respectfully submitted,

  
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Date: February 13, 2003  
JAW:ves



PATENT  
Attorney Docket No. 401042/YPLEE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

TADAO YAMAGUCHI

Application No. 09/770,383

Art Unit: 2834

Filed: January 29, 2001

Examiner: B. Mullins

For: NON-CIRCULAR, FLAT MOTOR

AMENDMENTS TO SPECIFICATION AND CLAIMS MADE IN  
RESPONSE TO OFFICE ACTION DATED NOVEMBER 14, 2002

*Amendments to the paragraph beginning at page 7, line 1:*

Here, a non-circular shape may be any ~~square~~ shape such as a square, a ~~rectangular~~ rectangle, or a polygon, or may be a shape like a keyhole, when viewed in a plane. Also, in the present embodiment, each terminal is exposed ~~outside~~ by being folded so that reflow soldering can be easily performed.

*Amendments to the paragraph beginning at page 8, line 25:*

In this case, the brush 8A is used as a feeder terminal for supplying a high electric potential and a recess groove 22a is ~~installed~~ located at a neutral position of the magnet 66 to insulate the feeder terminal from other ~~portion~~ elements adjacent thereto. Also, for insulation of the bracket 11, a concave portion 22b for a recess is ~~installed at a position~~ located where a connection portion 11c of the yoke 11a is cut. At least one of a plurality of magnet arrangement guides 22c protrudes ~~to face~~ and faces the magnet and is coated with resin.

*Amendments to the paragraph beginning at page 11, line 22:*

FIG. 9 shows a brushless type non-circular flat motor according to a fourth preferred embodiment of the present invention. That is, a shaft core 1a ~~protrudes~~ protrudes from the center of a metal stator base (metal plate) 12 to which a printed circuit board is attached. The ~~protruding~~ protruding shaft core 1a is coated with a slippery resin, thus forming a resin coated, fixed shaft 1S.

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*Amendments to the paragraph beginning at page 13, line 12:*

Further, the motor itself can be ~~made~~ light and an additional shaft is not necessary. When the motor ~~is formed of~~ includes a resin-integrally integral with the housing, ~~a~~ manufacturing cost ~~may decrease~~ decreases and ~~an effect of heat insulation can be obtained~~ is provided during reflow soldering. Also, a stainless steel bearing is not needed and a flat brushless motor with less sliding loss ~~and bearing reflow soldering can be obtained~~ is produced. Also, mass production of coreless brush-~~attached~~ motors is ~~possible~~ achieved by the manufacturing method of the present invention.

*Amendments to existing claims:*

Cancel claims 1 and 3.

4. (Thrice Amended) ~~The A non-circular flat motor as claimed in claim 1, further~~ comprising:

a rotor having an axial direction;

a housing which is non-circular in a plane perpendicular to the axial direction, which rotatably supports the rotor, and which has side surfaces, at least a part of which are flat, and which includes a stator base;

an armature coil at the stator base;

a flat magnet on the rotor facing the armature coil and spaced from the armature coil by a gap;

a plurality of feeder terminals arranged at the side surfaces, at corners of the housing, and electrically insulated from adjacent portions of the motor;

~~a flat magnet;~~

a bracket as part of the housing and on which the magnet is disposed; and

a pair of brushes, at least one of the brushes being connected to the feeder terminals through a first gap between the bracket and the magnet as insulation, wherein the rotor receives electric power via the brushes and faces the flat magnet across a second gap in the axial direction.

7. (Thrice Amended) A non-circular flat motor comprising:

a rotor having an axial direction;

a stator base having a shaft ~~for~~ supporting the rotor and that is centrally located on the stator base;

a housing having a metal portion and a non-circular shape in a plane perpendicular to the axial direction, and being at least partially a resin; and

at least two feeder terminals arranged at a corner of the housing, on a side surface of the housing and, ~~electrically-insulating the feeder terminals~~ insulated from the metal portion of the housing.

8. (Twice Amended) The motor as claimed in claim 7, wherein the shaft has a fixed shaft core extending from a portion of the housing constituting a stator, the fixed shaft core ~~having a~~ is resin-coating coated, the rotor is rotatably installed on the resin coated fixed shaft core, and a tip of the shaft is inserted in a concave portion of the housing.

9. (Thrice Amended) The motor as claimed in claim 8, further comprising:

a magnet;

a magnetic yoke plate, the fixed shaft core integrally protruding from the center of the magnetic yoke plate, the magnet yoke plate constituting part of the housing;

a bracket including the resin coated fixed shaft core and incorporating at least part of the magnetic yoke plate;

a rotor including a commutator and an armature coil having an end connected to the commutator and rotatably supported by the resin coated, fixed shaft core, the rotor facing the magnet and spaced from the magnet by a gap;

a pair of brushes having base ends and contacts in sliding contact with the commutator and fixed such that at least two surfaces of the base ends are exposed to the bracket, wherein the magnet is placed at a yoke portion of the bracket after the brushes are installed;

a brush recess insulating at least one of the brushes from the magnetic yoke plate; and ~~an armature coil having one end connected to the commutator and rotatably arranged at the resin coated, fixed shaft, facing a magnet across a gap, wherein the magnet is placed at a yoke portion of the bracket after the brushes are installed; and~~

a case accommodating the rotor and having a concave portion at the bracket and receiving the tip of the resin coated fixed shaft centrally in the case, at least a magnetic path portion of the magnet being a magnetic body.

11. (Twice Amended) The motor as claimed in claim 10, wherein the magnetic yoke plate is partially separated from the case~~except for a combined portion~~.

12. (Amended) The motor as claimed in claim 11, wherein a portion for reflow soldering is ~~not close to~~ located where the combined portion magnetic yoke plate is separated from the case.

13. (Thrice Amended) The motor as claimed in claim 9, wherein the resin of the resin coated fixed shaft ~~include~~ core includes a potassium titanate whisker ~~and~~, withstands a thermal deformation temperature of over 200°C (18.5 kgf/cm<sup>2</sup>), and is slippery.

14. (Thrice Amended) ~~The A non-circular flat motor according to claim 1,~~ comprising:

a rotor having an axial direction;

a housing which is non-circular in a plane perpendicular to the axial direction, which rotatably supports the rotor, and which has side surfaces, at least a part of which are flat, and which includes a stator base;

an armature coil at the stator base;

a magnet on the rotor facing the armature coil and spaced from the armature coil by a gap;

a plurality of feeder terminals arranged at the side surfaces, at corners of the housing, and electrically insulated from adjacent portions of the motor;

a metal plate incorporating a shaft support, at a center, a shaft support, the metal plate forming a first part of the housing;

a fixed shaft supported by the shaft support, the rotor being rotatably installed at a tip of the fixed shaft; and

a plurality of armature coils arranged around the fixed shaft to drive the rotor, wherein a second part of the housing supports the tip of the fixed shaft.

17. (Twice Amended) The motor as claimed in claim ~~1~~ 14, wherein the rotor is eccentric to generate vibrations during rotation.